ENTOMOLOGICAL NEWS

NOVEMBER, 1941

Vol. LII No. 9

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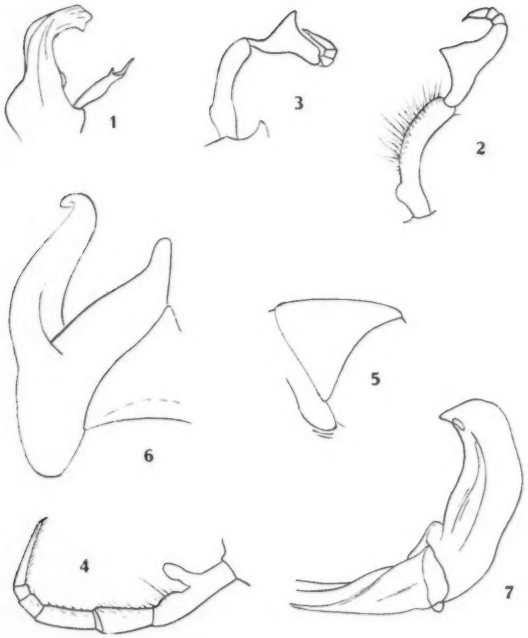

Fig. 1. *Cleidogona nueva*, new species. Right gonopod of male, ectal view.
Fig. 2. The same. Left leg of 9th pair of male, caudal aspect.
Fig. 3. *Cleidogona nueva michoacana*, new variety. Right leg of 9th pair of male, anterior view.
Fig. 4. The same. Left leg of 10th pair of male, caudal view.
Fig. 5. *Eurelus tancitarus*, new species. Collum as seen from the right side.
Fig. 6. The same. Anterior gonopod of left side, anterior view.
Fig. 7. The same. Posterior gonopod of left side, caudal view.

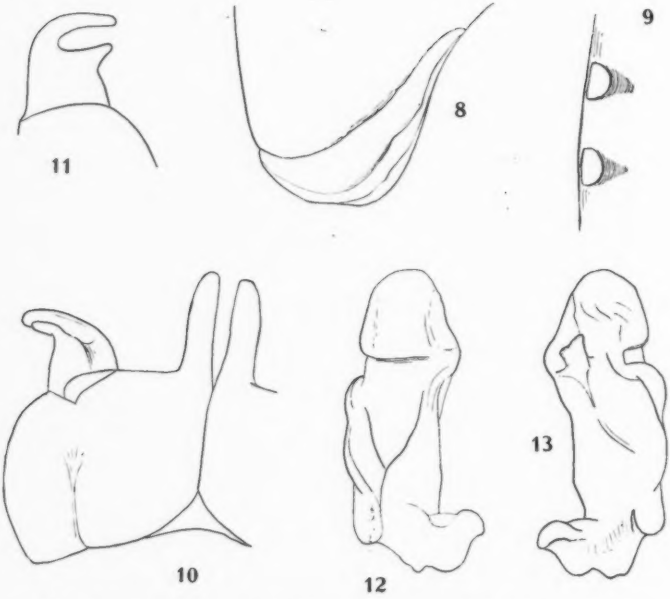

Fig. 8. *Orthoporus leonicus*, new species. Collum as seen from right side.
Fig. 9. *Rhinocricus potosianus*, new species. Scobina of segment in middle section of body.
Fig. 10. *Messicobolus hoogstralli*, new species. Anterior gonopods of male, anterior view.
Fig. 11. The same. Distal end of telopodite of anterior gonopod, caudodorsal view.
Fig. 12. The same. Right gonopod of posterior pair, caudal side.
Fig. 13. The same. Right posterior gonopod, anterior side.

ENTOMOLOGICAL NEWS

VOL. LII NOVEMBER 1941 No 9.

Samuel Henshaw, 1852-1941. An Appreciation.

Announcement of the death of Samuel Henshaw, on February 5, 1941, was made in the NEWS for March last. Since then two biographical notices of him have appeared: one by his associate in the Museum of Comparative Zoology at Cambridge, the paleontologist, Robert T. Jackson (Science for April 11), the other by two entomologists of the United States Bureau of Entomology and Plant Quaratine, Joseph S. Wade and J. A. Hyslop (Proceedings, Entomological Society of Washington 43: 108-110). To those accounts we can add nothing. Henshaw's reticence concerning himself is illustrated by the brevity of his autobiographical data in *American Men of Science* and in *Who's Who in America.*

His positions at the Museum from 1891 to 1927, first as assistant to Dr. H. A. Hagen, then as assistant in entomology, curator and director, gave him the opportunity to influence greatly the careers of students of insects. As one of these, I wish to put on record some evidences of appreciation. I made his acquaintance on July 25, 1890, when at the Museum to meet Dr. Hagen. I must have made a favorable impression on him for repeated visits to the M. C. Z., enabled me to acquire a knowledge of American Odonata from what was at that time one of the largest collections in the world, certainly in the western hemisphere. In 1899, he allowed me to borrow and bring from Cambridge to Philadelphia, an extensive series of neotropical specimens which were utilized in the preparation of the *Biologia Centrali-Americana* and in a contribution to the Neotropical Odonate fauna other than that of Mexico and Central America. It is idle to speculate whether my—and others'—opportunities would have been greater or

less had someone else occupied Henshaw's positions. Suffice it to say that I appreciated them then and now, and just as I told him on that cold snowy evening of December 29, 1933, when I last saw him, in his Fayerweather Street house, so now I repeat: I am grateful and I thank him.

PHILIP P. CALVERT.

Prothetely in Scolytus multistriatus Marsham (Coleop.: Scolytidae).

By RAIMON L. BEARD and PHILIP P. WALLACE.
Connecticut Agricultural Experiment Station,
New Haven, Conn.

Prothetely, or the presence of pupal characteristics in the larval stage, has been reported in several families of Lepidoptera and Coleoptera. Earlier literature covering these reports has been summarized by Thomas (1933).

Since 1933, prothetely has been reported in *Epilachna varivestris* (*E. corrupta*) by Landis and Davidson (1934), in *Tribolium confusum* by Oosthuizen and Shepard (1936), and in *Melanotus longulus* by Stone (1938).

Observation of several cases of this developmental abnormality among larvae of the elm bark beetle, *Scolytus multistriatus* Marsham, adds a representative of the family Scolytidae to the list of Coleoptera exhibiting this phenomenon.

The larvae of this beetle are typically scolytoid in form and do not normally possess legs. The pupal stage of the insect is preceded by a short prepupal period which is characterized by an enlargement of the thoracic region, with the presence of bulbous structures indicative of the future legs. The prothetely observed is chiefly marked by the presence of legs which are readily distinguished from these prepupal protuberances.

The specimen showing the greatest development of "pupal" characteristics possessed both legs and wing pads. The legs were conspicuous, having the shape illustrated in Figure 1, B.

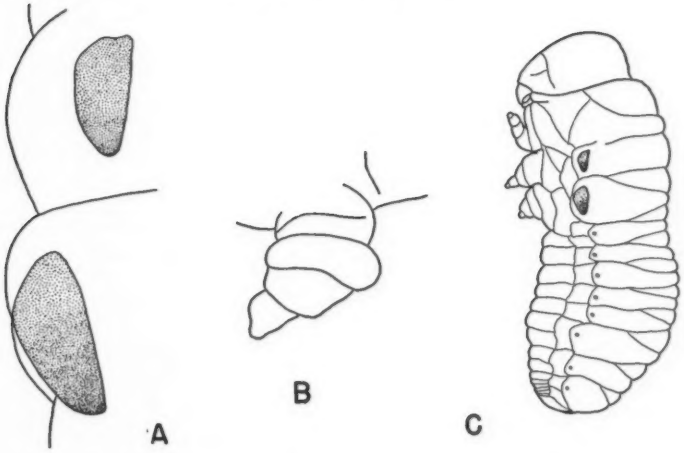

Fig. 1. Prothetely in *S. multistriatus*. A. Dorsal aspect of lateral region of mesonotum, showing position and relative size of wing pads. B. Outline of leg. C. Outline, drawn to scale, of prothetelous larva.

Although the legs had a jointed appearance, there was no evidence of their having any functional significance. The two pairs of wing pads were sclerotized, the posterior pair being somewhat better developed. The wing pads (Fig. 1, A) were flattened sacs, appearing to evaginate from the lateral region of the mesonotum and metanotum. It is presumed that this larva, when found, was in the penultimate stadium, as it molted once and later succumbed (probably from desiccation), when it showed evidence of approaching the prepupal condition.

Another specimen, found in the last larval instar, had legs developed almost as well as the one just described, but only the posterior pair of wing pads was evident. This individual pupated and reached the imaginal stage with no apparent difficulties. The adult form did not appear abnormal in any way, indicating that the presence of premature legs and rudimentary wings had no obvious effect upon the viability of the insect.

Approximately twelve other larvae were observed to bear the abnormality in degrees varying from the above two to larvae possessing slight conical protuberances suggestive of leg structures. No confusion, however, arose between these and the protuberances which characterize the prepupal stage.

In only three cases were wing pads present.

An estimated one fourth of one percent of the beetle larvae showed the abnormality, as the number of larvae examined carefully enough to detect the legs approximated 5,000.

Pruthi (1927) believed that in certain Tenebrionids a combination of larval and pupal characteristics indicated a condition of inhibited metamorphosis to which he applied the term neoteny. There is no doubt that the cases here reported for *S. multistriatus* are conditions of prothetely, as the possession of legs and wing pads was noted in the larval instar preceding the definitive prepupal and pupal stages.

In most cases on record (vide Thomas 1933) prothetely has not been observed on material taken in nature, but on experimental material subjected to unusual environmental conditions. Moreover, such a morphological abnormality has generally prevented normal development. It is of particular interest to note, then, that these prothetelous larvae of *S. multistriatus* were taken from infested elm bark exposed to natural conditions and that of the two most extreme cases, one molted as a larva without difficulty, and the other pupated and developed into an apparently normal adult beetle.

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District of Columbia Butterfly Notes (Lepidoptera : Rhopalocera).

By Warren Herbert Wagner, Jr., Washington, D. C.

(Continued from page 200.)

Eurema jucunda Boisduval and Leconte. I took an old but unbroken male on alfalfa flowers in the Soldiers Home Grounds on July 24, 1935. Mr. Carroll Wood told me that every year specimens are found at Salem, Virginia, so perhaps this butterfly can be expected to reach Washington regularly and therefore should be regarded as a rare visitor.

Pieris protodice Boisduval and LeConte. A distinctive autumn form occurred in the District region in 1934-35-36. Similar specimens are found in other localities according to Dr. George W. Rawson. The shape is nearest that of the summer form, but the chalky white color of the wings and dark markings underneath are closer to the spring form.

Papilio ajax Linnaeus. In the spring a small, light form occurs just as in all of the other swallowtails. It is found in the last half of April and early May and is characterized by the greater amount of yellow relative to the black ground color. The row of spots nearest the outer edge is larger and the females have more yellow in the inner row than in the summer form. There is more hair on the bodies of both sexes.

P. palamedes Drury. On July 31, 1937, I saw an unmistakable *palamedes* near Chillum Heights in Washington from a distance of about 200 feet. Even at this distance the lumbering flight and checkered appearance make it easily recognizable. I caught up with it but unfortunately "muffed" it. It was a fresh specimen. A previous storm may account for its presence so far from its native swamps.

P. marcellus Boisduval. Intermediates between the late-spring and the summer forms are found occasionally in late May. A fresh one at hand taken by Mr. Wayne K. Hill is a female and intermediate in every respect.

Rhabdoides cellus (Boisduval and LeConte.) This butterfly is a permanent resident here, reappearing every year in the locality near Great Falls, Maryland, discovered by Mr. and

Mrs. Clark.

ERYNNIS ZARUCCO Lucas. This species was taken for the first time when a mated pair was captured July 12, 1935, in the Soldiers Home Grounds. They were identified by Foster H. Benjamin as *zarucco* (*terentious*). It is probably more common along the Chesapeake Bay Region of Maryland east of Washington.

STAPHYLUS HAYHURSTII (Edwards). Although it does not occur in the original Washington area, this skipper is quite common at Camp Letts, Maryland, just twenty-nine miles away. It is found along paths in woods and the edges of woods bordering on old fields and salt marshes.

HESPERIA METEA (Scudder). Mr. and Mrs. Clark have this skipper from nearby in Virginia. It is not uncommon in the Catholic University Grounds in Washington wherever there are dry grassy fields interspersed with pines. My earliest date is April 25, 1938, when three fresh specimens of both sexes were taken. My latest capture was May 29. It is extremely inconspicuous and hard to catch.

POLITES MANATAAQUA (Scudder). Before 1932, this skipper was apparently rare but since that time it has been abundant. May 25, 1936, is my earliest date and it disappears around the end of June appearing again toward the end of July. I took a gynandromorph in field east of 16th Street, N. W., near the District line. A common tendency among the males is to lose the orange-yellow markings above the stigma, making the specimens almost completely melanic. Some of these have been confused with *Atrytone vestris,* but the stigma shape and the presence of light tan scaling on the underside of the hind wings in *manataaqua,* which is absent from *A. vestris,* enable easy identification usually.

ATRYTONOPSIS HIANNA (Scudder). The same localities that yield *H. metea* also yield *hianna* in much greater quantities. *Hianna* emerges later than *metea*—my earliest date is May 5, 1938—and it can be found until the first week in June. It rarely visits flowers but when it does this skipper is usually

found on blackberry blossoms. The height of the season is the middle of May when fifty or so can be taken in a morning: mated pairs are most common at this time. *Hianna* is occasional in several other places in and around Washington.

The specimen captured August 26, 1939, by Mr. Clark and listed as this species has since been found to be *Lerema accius*. *Hianna* has but one brood.

LERODEA EUFALA (Edwards). A single male was taken September 7, 1935, in a flower bed in MacMillan Park. It should be regarded as a very rare visitor here late in the summer.

POANES ZABULON (Boisduval and LeConte). This common skipper has two broods here instead of one. My records show that it disappears toward the end of June and reappears the last week in July and flies until September.

P. MASSASOIT HUGHI Clark. Another bog where this butterfly is abundant was located at Hyattsville, Maryland. Both the Beltsville, Maryland Bog and that at Hyattsville are being destroyed in their natural flora and fauna by "improvements." In 1936, this butterfly appeared as early as June 25. The form of this subspecies, corresponding to *suffusa* of typical *massasoit*, is frequent in both sexes and has the yellow-orange patch on the underside of the hind wings evenly covered over with dark rusty brown. *Poanes massasoit hughi* may conceivably disappear from our area as did *P. aaroni* and *viator*.

P. VIATOR (Edwards). This is a common skipper in and near salt marshes around Camp Letts and along the Patuxent River at Benedict, in Maryland, but I doubt if it now occurs normally much nearer to Washington. My earliest and latest dates are June 20 and September 7. There are at least two broods.

P. AARONI Skinner. The above named localities for *viator* also yield this skipper, but in smaller numbers. *Aaroni* wanders quite far away from its supposed home at Camp Letts, Maryland. In fact all but one taken there were found in an old field a quarter-mile from the nearest salt marsh. On June 20, 1939, Dr. George W. Rawson and I took more than a dozen

of both sexes in this field. There are two broods; the first is from the second week in June to the first week in July and the second from the third week in August to at least the second week in September. Many specimens, both Mr. Clark and Mr. Williams agree, approach in size and color the subspecies *howardi* from Florida. Although this interesting skipper has been often reported from the Eastern shore of Maryland, I believe these records are the first from the Western shore side of Maryland.

PANOQUINA OCOLA (Edwards). I have taken this butterfly in Washington from August 4 to September 23. It is rare here and the only female I have ever seen here was on the Chain Bridge Flats along the Potomac River. Held between two fingers, a male will slowly rotate its antennae after the curious fashion of *Ancyloxypha numitor* when at rest, as described by Mr. Scudder, and *Atrytone logan* held between the fingers, as described by Mr. Clark.

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(gynandromorph), and *Calpodes ethlius* recorded from the District of Columbia area.]

Id. Butterflies from Virginia. Proc. Biol. Soc. Washington, vol. 52, pp. 177-184, Dec. 15, 1939. [*Poanes aaroni* recorded from Washington.]

A New Race of Vespula squamosa (Drury), from Michoacan, Mexico (Hymenoptera, Vespidae).

By J. Bequaert, Museum of Comparative Zoölogy, Cambridge, Massachusetts.

The small collection of Vespidae made in Mexico last summer by Mr. Harry Hoogstraal and Mr. Kenneth Knight was recently acquired by the Museum of Comparative Zoölogy. It contains an interesting local race of *Vespula* (*Vespula*) *squamosa* (Drury), the first to be known of that species.

Vespula squamosa var. (or subsp.) **michoacana**, new.

Worker.—Black, with the following yellow markings: clypeus, except for a median longitudinal spot in upper two-thirds; inner orbits, filling the ocular sinuses but not reaching the vertex; a large, lozange-shaped spot above insertion of antennae, very narrowly divided from the inner orbits; outer orbits covering the entire genae and extending over hind part of vertex, but narrowly interrupted behind the ocelli; most of mandibles; scape beneath; broad hind margin of pronotum, narrowed and widely interrupted medially; two narrow, slightly curved, median, longitudinal stripes on mesonotum; a basal transverse band, broadly interrupted on scutellum, very narrowly divided on postscutellum; a small spot on each side of propodeum; a large spot in upper corner of mesepisternum; a small spot in upper corner of metapleura; tegulae; most of legs (often somewhat orange and the femora extensively infuscate); hind margins of all tergites and sternites, continued along the sides, narrow and uniform on tergites 1 and 6, much wider and with wavy anterior margin on tergites 2 to 5, very extensive and with lateral black spots on sternites 2 to 5.

In addition tergite 1 bears on the edge of the slope a narrow transverse band which does not reach the sides and is interrupted medially; the disk of tergite 2 is either entirely black or bears a narrow cross-band (sometimes mere traces of it)

which does not reach the sides and is interrupted medially. Under side of flagellum somewhat russet, particularly toward the tip. Wing as in typical *squamosa*. The yellow color is sulphur-yellow on head and thorax, slightly tinged with orange on abdomen.

Holotype, worker, and eight *paratypes* (workers), Tancitaro, 6600 ft., State of Michoacan, Mexico, July, 1940 (H. Hoogstraal and K. Knight). Mus. Comp. Zoöl., Cambridge, Mass. Paratypes also at Academy of Natural Sciences, Philadelphia, U. S. Nat. Museum and American Mus. of Natural History, New York.

It seems reasonable to assume that the curious reduction of the color markings of the abdomen is caused by the mountain climate. In the many workers of *V. squamosa* I have seen from the eastern United States and other parts of Mexico (Mexico City; Puebla; Hidalgo; Chihuahua), the discal transverse bands of tergites 1 and 2 are broad, connected with the yellow sides and not or very narrowly interrupted in the middle; the yellow markings of propodeum and mesopleura are also more extensive.

Seven New Millipeds from Mexico (Chilopoda).

By RALPH V. CHAMBERLIN, University of Utah,
Salt Lake City.

(Plates III and IV.)

The seven species of diplopods described as new in the present paper are based upon material collected by Harry Hoogstraal and Kenneth Knight, chiefly in June and July, 1940, on the "Third Hoogstraal Mexican Biological Expedition." Some specimens, however, as hereafter noted, were taken in June, 1938. All types are at present deposited at the University of Utah.

Order CHORDEUMIDA.
Suborder CHORDEUMOIDEA.
Family PSEUDOCLEIDIDAE.

Cleidogona nueva new species (Figs. 1, 2).

A blackish band across the dorsum of each metazonite en-

closing four light spots in transverse series, from each of which arises a seta, the lateral spot on each side more elongate; prozonite also with cross band of black embracing at middle two contiguous or sub-contiguous light spots and large lateral light area on each side more extensive than the corresponding spot on metazonite. A longitudinal dark band along the upper part of each side just below line of keels while the lower part of side is pale, the line of junction between dark and light deeply remote. Legs somewhat dusky white, darker distally. Antennae dark.

Eyes large, triangular with apex ectad, ocelli numerous and distinct, arranged in 6 or 7 series much as in *michoacana*.

Antennae slender, with articles of usual proportions, the seventh more slender and scarcely longer than the sixth.

Distinguished from *michoacana* in the form of gonopods and adjacent legs as shown in figs. 1 and 2.

Length 12-13 mm.

Locality.—NUEVO LEON: Sabinas Hidalgo; Ojo de Agua. One male taken on June 14, 1940, in decaying wood outside of a cave at an elevation of 1300 feet by K. Knight.

A lighter colored form than *C. nueva michoacana* from which it differs superficially also in color pattern; e. g., in having the pair of submedian dorsal light spots on prozonites which are wholly lacking in *michoacana*.

Cleidogona nueva michoacana new variety (Figs. 3, 4).

A black band along dorsum and a similar one along each side with upper border at or just below level of pores; on each side between dorsal and lateral dark stripes a longitudinal yellow stripe with irregular margins and the sides also light colored below lateral dark bands; the two more median setae on each segment each inserted on a small circular yellow spot; anal tergite black. Legs dusky yellow.

Eyes large and black, composed of numerous ocelli arranged in series from above below as follows: 7, 7, 7, 5, 5, 3, 1. Antennae long and slender, with the articles of the typical relative proportions.

Carinae weak, and setigerous tubercles slight.

Gonopods close to those of *nueva*, but the dorsal tooth on the basal spur appears lower and less acute.

Ninth legs of male as shown in fig. 3. Tenth legs of male as shown in fig. 4. Process of eleventh legs nearly the same as those of the tenth.

Length, about 13 mm.

Locality.—MICHOACAN: Tancitaro. Elevation, 6,500 feet. Under logs in damp ground. A male and female taken by Hoogstraal, July 22, 1940.

Order JULIDA.

Suborder SPIROSTREPTOIDEA.

Family SPIROSTREPTIDAE.

Orthoporus leonicus new species (Fig. 8).

Brown, the segments with a lighter ferruginous annulus about the caudal border and lighter brown anteriorly adjacent to each preceding segment. Legs brown of a somewhat ferruginous cast.

Head and collum smooth. Collum with form and characteristic lateral sulci as shown in fig. 8. Segmental encircling sulcus on ordinary somites deeply impressed throughout, widely and moderately excurved opposite the pore which is separated from it by about twice its diameter; longitudinal striae deep and complete up to the level of pore, above which they are abbreviated and are not present across dorsum; the metazonites appearing smooth but under the lens revealing numerous very fine punctae and slight anastomosing ridges. Last tergite with caudal portion sharply set off by transverse depression from anterior part, exceeded by the valves. Anal valves smooth, their inner borders compressed and strongly elevated.

Number of segments in female holotype, 72. In female paratypes 69 and 73 respectively.

Length, near 160 mm.; width, 9.5 mm. The two younger female paratypes are respectively 5.5 and 7.5 mm. in diameter.

Locality.—NUEVO LEON: Ojo de Agua, Sabinas Hidalgo. Elevation 1500 feet. Under damp rock near a stream. Three females taken by Harry Hoogstraal, June 18, 1938.

This is a larger, more robust form than other species heretofore reported from Mexico, apparently also quite distinct in sculpturing of collum and other segments.

Suborder SPIROBOLOIDEA.

Family RHINOCRICIDAE.

Rhinocricus potosianus new species (Fig. 9).

Olive to olive brown, the caudal borders of segments deeper

in color. Antennae and legs brown.

Head smooth and shining; median sulcus distinct below level of antennae, but obscure across vertex.

Collum with ends widely rounded; surface smooth and shining; a fine margining sulcus about the anterior corner on each side.

Second tergite extended well below level of the collum where its anterior border is thickened and elevated. On ordinary segments the median sulcus is distinct throughout, interrupted with impressed cross lines or punctae; slightly angled at level of pore with which it is in contact; surface above smooth and shining. Scobina beginning on ninth or tenth segment, where weak and small, and continuing to about the fiftieth where they again gradually fade out. In the segments of the middle region the scobina are deeply impressed with the striae very fine and close-set, the deep lunate areas separated by somewhat less than twice their width. See further fig. 9.

Number of segments in female holotype, 60.

Length, 108 mm.; diameter, 8.8 mm.

Locality.—San Luis Potosi: Valles, 7 miles south of El Banito. Elevation, 100 feet. Under bark of fallen tree. One female taken by Hoogstraal and Knight, June 26, 1940.

In general structure possibly near to *R. aurocinctus* of Durango, but strikingly different in coloration. The scobina in form and distance apart seem distinctive.

Family Spirobolidae.

Spirobolus nigrior new species.

Deep blackish brown, nearly uniform in color. Antennae and legs also blackish.

Eyes large, ocelli distinct, about 50-55 in number; arranged in 6 series. Clypeal foveolae 4 + 4.

Collum of usual general form; surface mostly smooth; a sharply defined anterior margining sulcus from level of eye to lower caudal corner; just above and subparallel with the margining sulcus a short stria running from caudal margin forward.

Second tergite extending well below level of the collum. On ordinary tergites the primary sulcus less sharply impressed across dorsum than the one in front of it. Posterior area of segments with numerous punctae; anterior ring marked with numerous fine short curved striae; striae on sides fine but

distinct, present to level of pores. Caudal triangular portion of last tergite depressed below level of anterior portion, somewhat roughened, the anterior area smooth and shining. Anal valves with borders strongly compressed and elevated.

Number of segments, 53.

Length of female holotype, about 72 mm.; width, 7 mm. The largest paratype is 8.2 mm. in thickness.

Locality.—NUEVO LEON: Villa Santiago (Hacienda Vista Hermosa—Horsetail Falls). On arid plateau at elevation of 2500 ft. One female taken by Hoogstraal and Knight on June 18, 1938. Ojo de Agua, Sabinas Hidalgo; twelve females taken under damp rocks near stream, elevation 1500 ft., by Hoogstraal on June 12, 1938.

In large size of eyes apparently differing from other known Mexican species excepting *S. platyops* Pocock from Mescala. It is, however, conspicuously different from that form in lacking yellow posterior borders to the segments, etc.

Messicobolus hoogstralli new species (Figs. 10-13).

Brown, in part of chestnut cast, the somites darker on sides adjacent to preceding segment. Legs light brown. Antennae somewhat chestnut brown.

Antennae obviously compressed, lying in a wide groove down side of head in front of eye and forward in mandible at side of clypeal region. Clypeal foveolae 4+4.

Collum narrowly rounded at ends; with a submarginal sulcus extending from level of eye to lower end on each side; surface smooth and shining. Second tergite produced well below level of collum; four longitudinal sulci above lower margin. On typical segments the pore lies its diameter or more in front of the segmental suture; a supplementary sulcus branches off from the suture above the level of the pore and parallels the primary suture across dorsum. Metazonites appearing smooth and shining above but under the lens showing numerous but not dense fine punctae and short impressed lines; sides longitudinally striate below level of pore.

Gonopods of male as shown in figs. 10, 11, 12, and 13.

Number of segments 48-49.

Length of male holotype, about 100 mm.; diameter, 11 mm. Diameter of female allotype, 13 mm.

Locality.—NUEVO LEON: Sabinas Hidalgo, Ojo de Agua.

Five males and one female taken by Harry Hoogstraal, June 14, 1940, under damp rocks near a stream. "Arid semi-desert."

A larger form than *M. godmani* (Pocock) with 48-49 segments as against 42, distinct also in the form of the male gonopods.

Family ATOPETHOLIDAE.

Eurelus tancitarus new species (Figs. 5-7).

The male holotype is brown with the caudal borders of somites darker. Legs and antennae brown. Some of the associated females vary to chestnut, but the dark annuli about borders of segments are conspicuous in all.

Antennae slender as usual. Ocelli 28-30 in each patch, arranged in 6 series, the eyes widely separated.

Collum smooth and shining; at ends narrowly rounded as shown in fig. 5. Second tergite extending much below end of collum, its lower posterior corner widely rounded as shown in the figure. Segmental sulcus single, distinct throughout. Pore contiguous with segmental sulcus; a short deep longitudinal sulcus behind middle at level of pore. Longitudinal striae numerous and fine beneath but not reaching level of pore by a wide distance. Surface not punctate.

In the male the claws of the first two pairs of legs enlarged. The processes of coxae of third legs much smaller than in other known species and the coxae of immediately following legs scarcely compressed and with processes obsolete.

The gonopods of the male also distinctive among the known species. See figs. 6 and 7.

Number of segments in male holotype, 43. In females, 41-42.

Length of male holotype about 35 mm.; diameter, 4.5 mm. Females up to 60 mm. long and 8 mm. in diameter.

Locality.—MICHOACAN: Tancitaro. On soil under rocks in moist woods. One male (holotype) and ten females taken by Hoogstraal on July 20, 1940.

In the reduced size of coxal processes in the male *E. kerrensis* forms a transition to the present species. *E. tancitarus* is clearly distinct from other known species also in the characters of the male gonopods.

Cockroaches: The Forerunners of Termites (Orthoptera: Blattidae; Isoptera).

By PHIL RAU, Kirkwood, Missouri.

The termites show a very close structural relationship to cockroaches; they are, however, much more recent in geological time, having made their appearance during the age of Reptiles, whereas the cockroaches are known to be among the oldest of insects. There is little doubt, says Imms[1] that the Isoptera rose from cockroach-like forms and "subsequently developed a complex social organization." In observing cockroaches intimately for a number of years I am inclined to believe that termites did not subsequently develope a complex social organization, as Imms says, but that many of the features of social behavior which they possess were handed down to them from their ancestors, the cockroaches. Certain characteristics of termite behavior were already evident in cockroaches long before termites came upon the earth, and my attention was especially attracted to this problem when I found two species of domiciliary cockroaches mixing bits of wood, grains of sand, fecal pellets, or chunks of soil with the glutinous secretions of the mouth and applying the mixture to egg-cases, thereby completely disguising them.[2] Now termites have the habit of using similar mixtures for nest building and nest repairing and since this habit was evidently inherited from the cockroaches I thought perhaps that the gathering of additional data on how other species of cockroaches treat the egg-cases would throw some phylogenetic light on the subject.

I found that the two species alluded to, *Blatta orientalis* and *Periplaneta americana,* glue bits of surrounding material to the egg-case; *Periplaneta australasiae*[3] also covers the egg-case

[1] Recent advances in Entomology; p. 85, 86, 1931.

[2] Ent. News 51: 186-187, 1940; also article soon to appear in Annals Ent. Soc. Amer.

[3] Rau, Jungle Bees and Wasps of Barro Colorado Island P. 196, 1933.

in the same way. Two species of wood-roaches in Missouri, *Parcoblatta virginica* (unrecorded observation) and *Parcoblatta pennsylvanica* (Ent. News 51: 6, 1940) do not cover the egg-cases but drop them as they are in galleries in rotten wood or under loose bark. The wood-eating roach, *Cryptocercus punctulatus*[4] cuts a groove in the wood, deposits the egg-case and seals it up so completely, that only one end is visible.

In the German cockroach, *Blattella germanica,* the period of incubation is much reduced, and also the egg-cases are carried for a longer time; the result is that often an egg-case gives forth its young while it is still being carried about by the mother[5]. The hatching of the eggs while the egg-purse is protruding from the mother's body is apparently a step toward the viviparous habit in cockroaches, and we have in the species *Panchlora viridis* an example of a cockroach that gives birth to its young alive; of *P. viridis* Sharp says (Insects, Pt. 1, 229, 1895) the egg-case is either wanting or present only in a very imperfect form.

We may note that the examples given thus far show the tendency of cockroaches to cover the egg-cases, to seal them up in a groove, to drop them loosely without cover, to carry them about until the eggs hatch from the protruding egg-case, and lastly to dispensing entirely with the egg-case in the viviparous species. Dispensing with the egg-case and dropping the eggs singly is the usual method of oviposition in termites; but even this method was anticipated by the cockroach for Gould and Deay[5] (p. 5) find that, during the latter part of their lives, the females of the American cockroach often "deposit eggs entirely unprotected by any trace of a capsule", and also there are indications that certain fossil Blattidae of Carboniferous did not make egg-capsules, but deposited the eggs singly in trees (Sharp, loc. cit., p. 239). While these two

[4] Cleveland, Mem. Amer. Acad. Arts and Sci. 17: (2) 185-342, 1934.
[5] Gould and Deay, Bull. 451, Purdue Univ. Agri. Exp. Station pp. 15-16, 1940.

unusual examples are very similar to the habit of termites in depositing their eggs singly, we have on the other hand a habit of oviposition in certain primitive termites, *Mastotermes darwiniensis,* which resembles very much the egg-laying habits of cockroaches. Snyder[6] states that this species has an egg-mass similar to the egg-capsule of cockroaches, "the individual termite eggs are firmly cemented together by a light brown gelatinous secretion which fills the insterstices between the eggs." The fact that *M. darwiniensis* is a primitive species makes its egg-laying habits all the more interesting as a connecting link to the cockroach.

There are other patterns in cockroach behavior which parallel termite behaviour or anticipate it; for example, Snyder tells us that in the wings of certain primitive cockroaches, a break occurs similar to the humeral suture or line of weakness near the base of the termite wing, where the wing breaks off after the colonizing flight. He also tells us that the large wingless brown roach, *Cryptocercus punctulatus* leads a sub-social life in partly decayed logs, where the wood serves both as shelter and food. And finally, as if flying directly into the arms of termite behavior, we have a cockroach—an Australian species belonging to the genus *Panesthia*—[7] which "lives in burrows in the soil in strict family communities, each of which consists of an adult male, a viviparous female, and from ten to twenty of their larval progeny in various stages of growth, * * * * * and soon after reaching maturity the adults bite off their own tegmina and wings, for these organs are inconvenient for inhabiting the burrow"—and this, I may say in passing, is about as far as a cockroach may dare go—without actually becoming a termite.

To conclude then, this little review indicates that cockroach behavior in many of its aspects is the forerunner of termite

[6] Our Enemy the Termite, pp. 16-17, 1935.

[7] Tillyard, Insects of Australia and New Zealand, p. 92, 1926.

behavior and that the termites themselves are not responsible for the development of all of the complex traits of their social behavior—but much of it has been handed down to them from their Blattoid ancestors. This outline, however, is suggestive rather than exhaustive and future research will, I am sure, supply many of the connecting links and strengthen many of the weak places in the phylogenetic scheme.

I may mention in passing, Dr. Wheeler's contention[8] that the historical and comparative method "still has much to offer in the study of behavior, although it has fallen into undeserved disuse, and even disrepute among laboratory biologists."

INSECT PESTS OF FARM, GARDEN AND ORCHARD. By LEONARD M. PEAIRS. New York, John Wiley & Sons, Inc., 1941. $4.00.—In 1912, Dr. E. Dwight Sanderson published the first edition of this work, which met with such well deserved success that he, with the coauthorship of Dr. Peairs, had to revise it for two more editions. The present edition is the fourth and from which, as coauthor, Dr. Sanderson had to withdraw. Although the general format of the former editions has been retained in the present one the subject matter is presented in a much improved manner, making a more comprehensive work, better serving the purpose for which it is published, i. e., as a text book for agriculturists and students of economic entomology. The contents are divided into chapters on: 1, Structure and Development; 2, Classification; 3-5, Control: climatic, biological, mechanical, cultural and chemical; 6-19, Insects injurious to various crops and fruits; with the last two on insects injurious to stored products and on those injurious to man and domestic animals. It contains 523 pages including the index, and 648 illustrations. The illustrations, with few exceptions are good and satisfactorily delineate the subjects. On the whole, a work that should find a useful place on the desk of all economic entomologists and should be a valuable consulting work for the practical agriculturist.—E. T. CRESSON.

[8] Essays in Philosophical Biology, p. 52, 1939.

Current Entomological Literature

COMPILED BY L. S. MACKEY and R. G. SCHMIEDER.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. All continued papers, with few exceptions, are recorded only at their first instaliment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

Note. References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of Entomological News for 10c. The number of, or annual volume, and in some cases the part, heft, &c., the latter within ( ) follows; then the pagination follows the colon :

Papers published in the Entomological News are not listed.

GENERAL.—Abbott, C. E.—The sensory basis of courtship. [6] 49: 217-220. **Anon.** Arthur Paul Jacot. [39] 24: 43-47. **Balch, R. E.**—The climate of the Maritime Provinces. [4] 73: 139. **Bates, M.**—Laboratory observations on the sexual behavior of anopheline mosquitos. [42] 86: 153-174. **Bruch, C.**—Misceianeas entomologicas. [Notas Mus. de la Plata] 6: 157-171, ill. **Buxton, P. A.**—A map projection of biological interest. [107] 16: 34, ill. **Chamberlin, W. J.**—Entomological Nomenclature and Literature. Michigan. 1941. 103 pp. **deLeon, D.**—Some observations on Forest Entomology in Puerto Rico. [Caribbean Forester] 2: 160-163. **Diakonoff, A.**—Het paramount-kaartsysteem ten dienste van de entomologie. [102] 7: 34-40. **Essig, E. O.**—Bibliography of entomological publications of Charles William Woodworth. [12] 34: 595-596. Itinerary of Lord Walsingham in California and Oregon, 1871-1872. [55] 17: 97-113, ill. **Fichter, E.**—Apparatus for the comparison of soil surface Arthropod populations. [84] 22: 338-339, ill. **Grier, M. C.**—Oceanography of the North Pacific Ocean. Bering Sea and Bering Strait: a contribution toward a bibliography. [Univ. Washington Publ.] 2: 169. **Hatch, M. H.**—The logical basis of the species concept. [90] 75: 193-212. **Hickin, N. E.**—Methods used in rearing small insects infesting stored food products. [107] 16: 35-38, ill. **Hovanitz, W.**—Parallel ecogenotypical color variation in butterflies. [84] 22: 259-284, ill. **Porter, L. C.**—

What kinds of light attract night flying insects most? Least? [General Electric Rev.] 44: 310-313, ill. **Snapp, O. I.**—History of the cotton states branch of the American Association of Economic Entomologists. [12] 34: 485-490. **Wade, J. S.**—Obituary Lee Abram Strong. [12] 34: 479-480, ill. **Whelan, D. B.**—The role of plastics in the field of entomology. [103] 14: 73-84. **Young, F. N.**—A correction. [39] 24: 31.

ANATOMY, PHYSIOLOGY, ETC.—Bodenstein, D.—Investigations on the problem of metamorphosis. VII. Further studies on the determination of the facet number in Drosophila [42] 86: 87-112. VIII. Leg determination 87: 31-54. **Brehme, K. S.**—The growth of transplanted minute and wild-type optic disks in Drosophila melanogaster [Growth] 5: 183-196. **Caspari, E.**—The influence of low temperature on the pupation of Ephestia kühniella. Z. [42] 321-332. **Classey, E. W.**—The Breck: an excerpt from a lepidopterist's diary, with notes on light. [9] 74: 171-173. **Day, M. F.**—Pigment migration in the eyes of the moth, Ephestia kühniella Z. [92] 80: 275-291, ill. **Dethier, V. G.**—The function of the antennal receptors in lepidopterous larvae. [92] 80: 403-414, ill. Chemical factors determining the choice of food plants by Papilio larvae [90] 75: 61-75. **Gjullin, Hegarty & Bollen.**—The necessity of a low oxygen concentration for the hatching of Aedes mosquito eggs. [Jour. Cell. & Comp. Physiol.] 17: 193-202. **Hinton, H. E.**—Notes on the internal anatomy and immature stages of Mucetophagus quadripustulatus (Mycetophagid.). [107] 16: 39-48, ill. **Krogh & Zeuthen**—The mechanism of flight preparation in some insects. [Jour. Exp. Biol.] 18: 1-10. **Kühn, A.**—Zur Entwicklungsphysiologie der Schmetterlingsschuppen. [97] 61: 109-147, ill. **Pearl, Park & Miner.**—Experimental studies on the duration of life. XVI. Life tables for the flour beetle Tribolium confusum D. [90] 75: 5-19. **Rosenblad, L. E.**—Description of ejaculatory sac diverticula in certain Drosophilinae. [90] 75: 285-288, ill. **Schneider, B. A.**—The nutritional requirements of Tribolium confusum Duval [92] 80: 208-227. **Stanley, J.**—A mathematical theory of the growth of populations of the flour beetle Tribolium confusum Duv. IV. [84] 22: 23-37. **Stern, C.**—The growth of testes in Drosophila. I. The relation between vas deferens and testis in various species. II. The nature of interspecific differences [42] 87: 113-159.

ARACHNIDA AND MYRIOPODA.—Bingham, M. L.—A note on the bionomics of Ixodes ricinus. [116] 33: 316-319. **Chamberlin, R. V.**—New western millipeds. [Bull. Univ. of Utah] 31: 23 pp., ill. New genera and species of American lithobiid centipeds. [Bull. Univ. of Utah] 31: 23 pp. Three new centipeds of the genus Cryptops. [13] 33: 41-43. **Chamberlin & Ivie.**—Spiders collected by L. W. Saylor and others, mostly in California. [Bull. Univ. Utah] 31: 49 pp., ill. **Gerhard, W. J.**—The mite and tick menace. [Field Mus. News] 12: p. 4, ill. **Hixson, H.**—A suicide host. [39] 24: 34. **Lundblad, O.**—Die Hydracarinenfauna Sudbrasiliens und Paraguays. [Kongl. Sv. Vet. Akad. Handlingar] 19: 183 pp., ill. **de Mello-Leitao, C.**—Las Arañas. [Univ. Nac. de la Plata] 2: 99-198, ill. **Radford, C. D.**—Notes on some new species of parasitic mites. [116] 33: 306-315, ill.

THE SMALLER ORDERS OF INSECTS.—Banks, N.—Some new and interesting Neuroptera in the American Museum of Natural History. [40] No. 1143: 5 pp. **Berner, L.**—Ovoviviparous mayflies in Florida. [39] 24: 32-34. **Holway, R. T.**—Tube-building habits of the eastern subterranean termite. [12] 34: 389-394, ill. **Ide, F. P.**—Mayflies of two tropical genera, Lachlania and Campsurus, from Canada with descriptions. [4] 73: 153-156. (*). **MacLeod & Craufurd-Benson.**—Observations on natural populations of the body louse, Pediculus humanus corporis. [116] 33: 278-299, ill. **Nutman, S. R.**—Function of the ventral tube in Onychiurus armatus (Collembola). [31] 148: 168-169.

ORTHOPTERA.—Breland, O. P.—Notes on the biology of Stagmomantis carolina (Mantid.). [19] 36: 170-177. **Flock, R. A.**—Biological control of the brown-banded roach. [19] 36: 178-181. **Hebard, M.**—The group Pterophyllae as found in the United States (Tettigoniid.). [1] 67: 197-219, ill. **de Mello-Leitao, C.**—Dos nuevas especies de Cephalocoema (Proscop.). [Notas Mus. de la Plata] 6: 141-145. **Rehn, J. A. G.**—On new and previously known species of Pneumoridae. [1] 67: 137-159, ill. **Tuck & Smith.**—Identification of the eggs of midwestern grasshop-

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HEMIPTERA.—China, W. E.—Genotype fixations in Hemiptera Heteroptera. [107] 10: 130. **Doering, K. C.**—A revision of two genera of North American Cercopidae. [103] 14: 102-108, cont. (k). **Drake, C. J.**—Three new American Tingitidae. [55] 17: 139-141. **Gorham, R. P.**—An early record of aphid flight. [4] 73: 136. **Islas, F.**—Desarrollo y caracteres morfologicos de Triatoma picturata. [112] 12: 311-326, ill. **Pelaez, D.**—Estudios sobre Membracidos. [112] 12: 327-344, ill. [Rev. Soc. Mexicana Hist. Nat.] 2: 51-67, ill. **Sailer, R. I.**—A new species of Thyreocorine from Mexico. [103] 14: 90-91, ill. **de la Torre-Bueno, J. R.**—A synopsis of the Hemiptera-Heteroptera of America North of Mexico. [70] 21: 41-122. (k). **Usinger, R. L.**—The genus Oechalia (Pentatomidae) [37] 11: 59-93, ill. A remarkable immigrant Leptopodid in California. [19] 36: 164-165. **Wood, S. F.**—Notes on the distribution and habits of reduviid vectors of Chagas' disease in the southwest United States. (Reduviid.). [55] 17: 115-118.

LEPIDOPTERA.—Barber, G. W.—Observations on the egg and newly hatched larva of the corn ear worm on corn silk. [12] 34: 451-456. **Bell, E. L.**—New species of neotropical Hesperidae. [40] No. 1125: 10 pp., ill. **Burdick, W. N.**—A new race of Parnassius smintheus from the Olympic Mountains of Washington [4] 73: 117-118, ill. **Clark, A. H.**—Notes on the American representatives of the butterfly genus Argynnis. [91] 31: 381-384. **Clarke, J. F. G.**—The preparation of slides of the genitalia of Lepidoptera. [19] 36: 149-161, ill. **Comstock & Dammers.**—Ctenucha brunnea on Santa Rosa Island. [38] 40: 11-12, ill. **Dethier, V. G.**—(See under Anatomy.) **Evans, W. H.**—The resting positions of butterflies. [107] 16: 33. **Franclemont, J. G.**—The pulverulenta group of the genus Pseudanarta (Phalaenid.). [4] 73: 132-136, ill. **Freeman, T. N.**—New species of Canadian Lepidoptera. [4] 73: 123-127, ill. **Griffin & Griffin-Gillen.**—The terminology used by Jacob Hübner. [107] 16: 49-54. **Hall, A.**—Catalogue of the Lepidoptera

rhopalocera of British Guiana. [Brit. Guiana Dept. Agric.] Ent. Bull. No. 3: 88 pp., ill. **Hoffmann, C. C.**—Lepidopteros nuevos de Mexico. [112] 12: 231-235, ill. Catalogo de los Lepidopteros mexicanos. [112] 12: 237-294. **Hovanitz, W.**—(See under General.) **Kühn, A.**—(See under Anatomy.) **Marsh, F. L.**—A few life history details of Samia cecropia within the southwestern limits of Chicago. [84] 22: 331, ill. **Martin & Houser.**—Numbers of Heliothis armigera and two other moths captured at light traps. [12] 34: 555-559, ill. **Richards, A. G., Jr.**—The genus Arugisa in the United States, with the description of a new species (Phalaenid.). [40] No. 1114: 4 pp., ill. **Tilden & Mansfield.**—Some observations and captures of California lepidoptera. [55] 17: 113-114, cont. **Vazquez, L.**—Estudio monografico de las Psychidae de Mexico. [112] 12: 295-310, ill. (*).

DIPTERA.—Alexander, C. P.—New or little-known Tipulidae Neotropical species. [75] 8: 105-132, ill. **Ayroza-Galvão & Coutinho.**—Contribuição ao estudo dos Flebótomos do estado de São Paulo, Phlebotomus sallesi no. sp. (Psichodid.). [Arq. Hig. e Saude Publ.] 5: 15-27, ill **Bates, M.**—(See under General.) **Bigham, J. T.**—Hippelates (eye gnat) investigations in the southeastern states. [12] 34: 439-444. **Bohart, G. E.**—A review of the genus Physocephala of the western United States. (Conopid.) [55] 17: 141-144. **Coutinho, J. O.**—Observações sôbre algumas espécies de flebótomus com a descrição do Macho de Phlebotomus lloydi-Antunes, 1937. [Arq. Hig. e Saude Publ.] 5: 31-41, ill. **Curran, C. H.**—Some new species of Mallophora (Asilidae). [6] 49: 269-284. New American Syrphidae. [62] 78: 243-304. (k). New neotropical Tachinidae. [40] No. 1113: 5 pp. (k). **Harmston & Knowlton.**—New species of Hercostomus from western North America (Dolichopodid). [4] 73: 127-132, ill. New western Dolichopodidae. [103] 14: 92-97, ill. **Hull, F. M.**—Some new species of Syrphidae. [19] 36: 166-168. **Mallis & Pence.**—The Pacific drain fly in homes. [12] 34: 586, ill. **Philip, C. B.**—Notes on nearctic Tabaninae, Part II. Tabanus and Hybomitra. [4] 73: 142-153. **Richards, A. G., Jr.**—Differentiation between toxic and suffocating effects of petroleum oils on larvae of the house mosquito (Culex pipiens). [1] 67: 161-196, ill. **da Silva Ramos & Unti.**—Notas sôbre os anofelinos de São Vicente e suas imedações. [Arq. Hig. e Saude Publ.] 5: 53-

58, ill. **Simmons & Dove.**—Breeding places of the stable-fly or "Dog Fly" Stomoxys calcitrans in northwestern Florida. [12] 34: 457-462. **Snyder, F. M.**—Contribution to a revision of neotropical Mydaeini. [40] No. 1134: 22 pp. (k*). **Vargas, L.**—Anopheles pseudopunctipennis willardi n. var. (Culicid.). [Rev. Soc. Mexicana Hist. Nat.] 2: 47-49. Simulium lane-portoi n. n. y lista de simúlidos mexicanos [Rev. Inst. Salubrid. y Enferm. Trop.] 2: 115-122. Aplicación taxonómica de un método estadístico. [Rev. Inst. Salubrid. y Enferm. Trop.] 2: 123-128, ill. **Webber, R. T.**—Synopsis of the Tachinid flies of the genus Tachinomyia, with descriptions of new species. [50] 90: 287-303. (k).

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tion of the genus Mischocyttarus (Vespid.). [107] 10: 124-130. (k*). **Weber, N. A.**—Notes on the effect of drouth upon the nesting habits of ants. [4] 73: 140-141.

GENERIC RELATIONSHIPS OF THE DOLICHOPODIDAE (Diptera), BASED ON A STUDY OF THE MOUTH PARTS, by Sister MARY BERTHA CREGAN, R. S. M., Illinois Biological Monographs, Vol. XVIII, No. 1. The University of Illinois Press, Urbana, Illinois, 1941. Pp. 37, 30 plates , 193 figs. $1.00—In her paper of the above title the author has proposed a generic arrangement of the American Dolichopodidae. Object of the study was, to quote, "To ascertain if the groupings of the American genera on the basis of mouthparts would conform to those of Langhoffer." Mouthpart structure was the basis upon which Langhoffer established a generic arrangement in the Old World Dolichopodidae. In addition to her own conclusions, the author gives a very "meaty" summarization of studies and observations made by earlier entomologists on the food habits, characteristics and habitats of this family. Four distinct types of mouthparts were found to occur among the thirty-two genera studied. They have been designated by Sister Cregan as: (1) the labralate type; (2) the epipharyngeal two-prong type; (3) the epipharyngeal four-prong type; and (4) the epipharyngeal plate type. The 193 freehand drawings illustrate both complete mouth units and individual structures in the various genera studied. Commonly used entomological terms are employed throughout. Mouthparts were prepared for study by being run through the potassium hydroxide, water, alcohol, xylol and glycerine series. The four main types are further divided, on the basis of structural characteristics in the epipharyngeal armature and pseudotrachea, into twelve groups of genera, which, as the author states, "may be considered as subfamilies although not so named here." The author has ascribed real importance to trophi structure as a means for generic classification, whereas, with the exception of Langhoffer, other systematists of the Dolichopodidae apparently gave little consideration to such structures. The phylogenetic arrangement of genera into subfamilies as proposed by Sister Cregan does not, in several instances, agree with the earlier system of Langhoffer, which likewise was based upon mouthpart structure, nor with those of Aldrich, Becker and Lundbeck, which were based upon external characters. In passing it should be noted, however, that in respect to many

genera the earlier classifications do not agree among themselves. Regardless of the value which different investigators may attach to Sister Cregan's classification, her paper should prove to be a valuable reference for anyone contemplating a comprehensive study of Diptera mouthparts.—FRED C. HARMSTON.

OBITUARY

Postamtmann i: R. M. P. RIEDEL died on March 27, 1941, following a long illness, at Frankfurt am Oder, Germany. He was born on February 19, 1870, and was thus in his 72nd year. Riedel was a distinguished student of the Diptera, particularly of the Tipulidae, having published numerous papers on the Australian, Oriental, Ethiopian, Neotropical and western Palaearctic faunas. He is survived by his widow, Margarete Weidefeld Riedel, and a daughter, Gertrud Riedel Kloeckner. The words "Postamtmann i. R." preceding the name refer to his being a retired officer of the German Postal Service.—C. P. ALEXANDER.

Science for July 4, 1941, announced the death of ALEXANDRE ARSÉNE GIRAULT in the hospital at Brisbane, Queensland, Australia, on May 2. He was born at Annapolis, Maryland, January 9, 1884, received the B.S. degree from Virginia Polytechnic Institute in 1903, was a special field agent of the U. S. Department of Agriculture, 1904-07, and was connected with the office of the State Entomologist of Illinois, 1908-11. He contributed many articles to the NEWS from 1900 to 1918, especially in 1913-1918. Many of these dealt with the parasitic Hymenoptera, especially the Chalcioidea, but there were many observations on the life histories and biology of various insects. Two of his early papers were bibliographies of entomological glossaries (1905). A series of ten Standards of the number of eggs laid by insects, being averages obtained by actual count of the combined eggs from 20 depositions or masses, ran from 1901 to 1914; references to volume and page numbers will be found in volume 25, page 296. Another series of three dealt with the number of eggs laid by spiders (1911-1914, vols. 22,

24, 25).

A note in the NEWS for October, 1911 (page 373) announces his appointment as entomologist of the Department of Agriculture of Queensland, and his papers from October of that year to January, 1915, are from Brisbane or from Nelson (Cairns). That of February, 1915, was sent from Washington, but in 1916, he removed to Glenndale, Maryland, where he was when the last of his NEWS papers (1918) appeared. Subsequently he returned to Australia.—P. P. CALVERT.

Prof. CHARLES BRANCH WILSON died on August 18, 1941, according to *Science* for August 29. He was born at Exeter, Maine, October 20, 1861, and received the degrees of A.B. (1881) and A.M. (1883) from Colby College and Ph.D. (1910) from Johns Hopkins University. He was head of the department of Science at the Massachusetts State Teachers College at Westfield, 1897-1932, since which time he was emeritus lecturer there. *American Men of Science,* from which we have taken many of these data, gives a fairly long list of the groups of animals he studied, many of them in connection with the United States Bureau of Fisheries. The only insects mentioned are water beetles and dragonflies. His papers on the latter deal with those of the Mississippi Valley (the Mississippi River from St. Paul to Cairo, Illinois, the Ohio from Cairo to Paducah, Kentucky, and the Tennessee from Paducah to Riverton, Alabama: Proc. U. S. N. M. 36, 1909), the Cumberland Valley in Kentucky and Tennessee (Proc. U. S. N. M. 43, 1912) and Jamaica (Johns Hopkins Univ. Circ., Feb., 1911). A more extensive paper, abounding in ecological and developmental data, is that on dragonflies and damselflies in relation to pondfish culture with a list of those found near Fairport, Iowa (Bull. Bur. Fisheries 36, 1920). This was reviewed and criticised by Prof J. G. Needham in the NEWS for January, 1921 (pp. 30-31). A later paper on the macroplankton of Lake Erie (Bull. Buffalo Soc. Nat. Sci. 14, 1929) contains a very brief reference to insects.

No papers by Wilson are listed in the bibliographies in

Leng's Catalogue of the Coleoptera of America north of Mexico, or in the four supplements thereto.

My personal acquaintance with Prof. Wilson was limited to an impromptu dinner of odonatologists at the Harvard Club, Boston, December 28, 1922, arranged by the late Dr. R. Heber Howe, in connection with the American Association for the Advancement of Science meeting. I omitted to make a record of all those who were present.—P. P. CALVERT.

Prof. ELLISON ADGER SMYTH, Jr., died on August 19, according to a note in *Science* for August 29. From biographical notices in *Who's Who in America* and in *American Men of Science* (fuller in the former), we learn that he was born in Summerton, South Carolina, October 26, 1863, received the A. B. (1884) and the A. M. (1887) from Princeton and the honorary LL.D., from the University of Alabama in 1906. He was adjunct professor of biology at the University of South Carolina, 1889-91 and professor of biology at the Virginia Polytechnic Institute at, Blacksburg, 1891-1925, when he retired. A. A. Girault, whose death we also announce in this issue, must have come in contact with him there. We recall Prof. Smyth as a not infrequent visitor to the late Dr. Henry Skinner, at the Academy of Natural Sciences of Philadelphia, in the eighteen nineties and the early nineteen hundreds, drawn by a common interest in the Lepidoptera. He contributed eighteen papers and notes to the volumes of the NEWS for 1895, 1899-1904, 1907, 1908, 1912, and 1916. They are concerned with the butterflies, sphingids, Catocalae and *Dynastes tityus* of Montgomery County, Virginia, within which Blacksburg lies, butterflies and *Allorhina* of South Carolina, life histories of sphingids and descriptions of two new species from Mexico, a sphinx, *Philampelus elisa*, and a *Morpho* (*thoosa*). In the NEWS for May, 1908, he figured and briefly described "Two Freaks:—Papilio ajax and Eudamus tityrus." Nearly twenty years later, the latter was "christened" *Epargyreus tityrus* aberration *smythi* by R. C. Williams, Jr. (Transactions, American Entomological Society 53: 262. 1927).

P. P. CALVERT.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Insects from Northern Korea.—I will collect insects for specialists in certain groups upon their request; very rich fauna; rates reasonable. Address: Mr. Alexander M. Yankovsky, Shuotsu-Ompo, Korea, Japan.

Wanted—Living specimens of the luminous beetle **Phengodes** this summer. E. Newton Harvey, The Biology Dept., Princeton University, Princeton, New Jersey.

Malacodermata (except Lycidae and Cleridae) of the world. Will determine and purchase. Also exchange against Col. or all other insects from Bolivia. Walter Wittmer, Correio 1043, Buenos Aires, Rep. Argentina.

I want to collect Rothschildia, agapema, gulfina and io moths and Texas butterflies for interested persons. Eula Frizzell, R 4 San Benito, Texas.

Wanted—To hear from collectors who desire extra good cocoons of Michigan **Platysamia columbia,** that will emerge June, 1941. W. S. McAlpine, 575 Townsend St., Birmngham, Michigan.

Wanted—Specimens of the genus Trox from North America. Will exchange or determine for duplicate material. Mark Robinson, 231 Cherry St., Sharon Hill, Pennsylvania.

Lepidoptera—From the South, including P. palamedes, T. halesus and E. jucunda to exchange for fauna from other localities. H. W. Eustis, Woodbine Rd., Lakemont, Augusta, Georgia.

Wanted—Egg cases of preying mantids. Correspondence desired with those who will collect. Osmond P. Breland, Department of Zoology, The University of Texas, Austin, Texas.

Wanted—To buy, specimens of bees of the genus **Nomada,** any quantity, especially North American. Quote price, locality. Hugo G. Rodeck, University of Colorado Museum, Boulder Colorado.

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